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 TI Free-cutting steels for bearing elements with long rolling-contact fatigue life
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AB The steels comprise C 0.8-1.2, Si 0.2-2.0, Mn 0.2-1.5, Cr 0.6-2.0, Al ≤ 0.05 , Cu ≤ 2.0 , Ni ≤ 4.0 , Mo ≤ 0.5 , V ≤ 0.2 , Nb ≤ 0.10 , Ca ≤ 0.003 , Mg $\leq 0.003\%$, and balance Fe and satisfy $5.0 \leq 1.6[\text{Si}] + 4.0[\text{Mn}] + 3.0[\text{Cr}] + 5.0[\text{Mo}] \leq 9.0$ and total concentration of Cr and Mn in cementites $\geq 5.0\%$. Inevitable impurities in the steels satisfy Ti ≤ 0.002 , P ≤ 0.02 , S ≤ 0.015 , N ≤ 0.009 , and O $\leq 0.0015\%$.